Questioned Documents Unit (QDU)
Procedures for Processing Evidence Using Acid Fuchsin (Protein Dye)
Section 5

1 Scope

This document applies to examiners and analysts in the QDU for the enhancement of patterned impressions in blood.

2 Equipment/Materials/Reagents

- Balance
- Weighing pans
- Spatulas
- Beakers (10 ml - 2000 ml)
- Magnetic stirrer
- Magnetic stirring bars
- Dipping trays (appropriate size for item being processed)
- Squirt bottles or spray bottles
- Lab coat
- Protective eyewear
- Disposable gloves
- 5-Sulfosalicylic acid
- Acid Fuchsin
- Distilled water
- Tap water

3 Standards and Controls

3.1 Acid Fuchsin Solution

Prepared in a 2 liter beaker on a magnetic stirring device. Dissolve 20 grams of 5-Sulfosalicylic acid and 2 grams of Acid Fuchsin in 1 liter of distilled water. The solution will be tested on a positive control blood stain prior to use.

A positive reaction will produce a deep magenta color. A small area of the background of the object or surface being enhanced should be stained with the solution prior to application. If the background develops a significant color, the Acid Fuchsin solution may not be appropriate for enhancement of this item.

Record the results of the control test in the *Chemical Enhancement and Control Logbook* located in the Shoeprint room.

The Acid Fuchsin solution can be stored in clear or dark bottles indefinitely.

4 Sampling

Not Applicable.

5 Procedure

5.1 The Acid Fuchsin solution may be applied by dipping the specimen to be enhanced in a tray filled with the solution or by using a squirt bottle filled with the solution to saturate the stained area. Completely cover the target area and allow to develop for approximately one minute. The specimen(s) should be rinsed with tap water and allowed to air dry.

5.2 At the completion of chemical enhancement, refer to the *QDU Procedures for Conducting Footwear and Tire Tread Examinations*.

6 Calculations

Not Applicable.

7 Measurement Uncertainty

Not Applicable.

8 Limitations

The color and porosity of the background substrate must be tested prior to use of this solution. Acid Fuchsin will react with the protein present in blood to produce a deep magenta color. If the background substrate is similar in color to deep magenta or if the background substrate stains a deep magenta color, then it will obscure the chemically enhanced impression.

9 Safety

9.1 Adhere to the safety practices outlined in the *FBI Laboratory Safety Manual*.

9.2 Handle any specimens containing known or possible biohazards in accordance with FBI Laboratory health and safety practices.

9.3 Dispose of all chemicals according to the *Chemical Disposal Guidelines* on file in the Shoeprint examination room.

9.4 Safety information concerning each of the chemicals used in these procedures are available from the *Material Safety Data Sheets (MSDS)* on file in the Shoeprint examination room.

10 References

Keith Barnett, Birmingham, UK - personal communication

FBI Laboratory Safety Manual

QDU Quality Assurance Manual

QDU Standard Operating Procedures Manual

Rev. #	Issue Date	History
0	07/03/06	Rev. for ASCLD/LAB-International (ISO 17025).
1	03/01/18	1 Scope, added "this document applies to examiners and analysts in the QDU" Deleted 4 Calibrations Refer to the *QD Quality Assurance Manual, Maintenance, Calibration and Performance for Equipment Verification"* and appropriately re-numbered

Redacted - Signatures on File

Approval

Questioned Documents Unit Chief — Date: 02/28/2018

Footwear/Tire Tread Technical Leader — Date: 02/28/2018

QA Approval

Quality Manager — Date: 02/28/2018